

### Amendments to the Claims

1. (currently amended) A method for processing radio frequency (RF) signals in a multi-antenna ~~systems~~ system, comprising:  
generating  $L_t$  input data streams in a transmitter, where  $L_t$  is an integer;  
modulating the  $L_t$  input data streams to RF signals;  
switching the RF signals to  $t \geq L_t$  RF branches, where  $t$  is an integer and  $t \geq L_t$ ;  
applying a phase-shift transformation to the RF signals branches by a  $t \times t$  matrix multiplication operator  $\Phi_1$ , whose output are  $t$  RF signals;  
transmitting the  $t$  RF signals over a channel by  $t$  transmit antennas;  
receiving the transmitted signals by  $r$  antennas in a receiver, where  $r$  is an integer;  
applying a phase-shift transformation to the  $r$  RF signals by a  $r \times r$  matrix multiplication operator  $\Phi_2$  to generate  $r$  streams;  
selecting  $L_r$  branches from the  $r$  streams, where  $L_r$  is an integer;  
~~demodulated~~ demodulating the  $L_r$  signal streams; and  
processing the demodulated  $L_r$  signal streams in baseband to recover output data streams corresponding to the input data streams.

2. (original) The method of claim 1, in which each of the  $L_t$  input data stream has a weight, and further comprising:  
summing the  $L_r$  weighted data streams before the demodulating and decoding.

- 1 3. (original) The method of claim 1, in which the  $L_t$  input data streams are  
2 generated by a space-time block coder.
- 1 4. (original) The method of claim 1, in which the  $L_t$  input data streams are  
2 generated by a space-time trellis coder.
- 1 5. (original) The method of claim 1, in which the input data streams are  
2 space-time layered structures.
- 1 6. (original) The method of claim 1, in which  $t = L_t$ , and the matrix  $\Phi_1$  is an  
2 identity matrix.
- 1 7. (original) The method of claim 1, in which  $r = L_r$ , and the matrix  $\Phi_2$  is an  
2 identity matrix.
- 1 8. (original) The method of claim 1, in which entries of the matrix  $\Phi_1$  have  
2 constant modulus phase-only terms.
- 1 9. (original) The method of claim 1, in which entries of the matrix  $\Phi_2$  have  
2 constant modulus phase-only terms.
- 1 10. (original) The method of claim 1, in which entries of the matrices  $\Phi_1$  and  
2  $\Phi_2$  have constant modulus phase-only terms.
- 1 11. (currently amended) The method of ~~claims 8~~ claim 8, in which the  
2 phase-only terms adapt to an estimate of an instantaneous channel state.

1 12. (original) The method of claim 8, in which the phase-only terms adapt to  
2 an estimate of an average channel state.

1 13. (original) The method of claim 1, in which the matrix  $\Phi_1$  is a fast Fourier  
2 transform matrix.

1 14. (original) The method of claim 1, in which the matrix  $\Phi_2$  is a fast Fourier  
2 transform matrix.

1 15. (original) The method of claim 1, in which the matrices  $\Phi_1$  and  $\Phi_2$  are  
2 fast Fourier transform matrices.